U.S. Department of Commerce
National Institute of Standards and Technology
Gaithersburg, MD 20899-2350

Certificate Number: 99-173

National Type Evaluation Program

Certificate of Conformance

for Weighing and Measuring Devices

For:

Retail Motor Fuel Dispenser
Electronic Computing
Model: BXX Series
Generic Name: The Advantage® Series
Capacity: $9999.99 Total Sale
999.999 Total Volume
$9.999 Maximum Unit Price

Submitted by:

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Standard Features and Options

*The specific model designations of devices covered by this Certificate are listed below and on Page 2.

Meter Models	PA024TC, PA024NC	PA024TC, PA024NC, PA024EC	PA024EC	T20453-GX
	Standard	Super-Hi	E-Cal*	Ecometer*
Minimum Flow Rate	2 gpm	6 gpm	2 gpm	1.5 gpm
Maximum Flow Rate	13 gpm	30 gpm	13 gpm	21 gpm
*The E-Cal unit has the electronic totalizer as a standard feature and will not have optional mechanical totalizers installed.				

Back-lighted liquid crystal displays
Category 1 event counter audit trail (see "Sealing" on Page 2)
Electronic totalizer with volume and sales up to 9 999 999.99 units
Battery back-up for up to 72 hours
Stand-alone or console controlled
Nozzles lane-oriented and high-hose attachment

Options:

Cash acceptor
CRIND (card reader in dispenser)
TRIND (transmitter/receiver in dispenser)
Full vapor recovery
Bar code scanner
Light conduit
Push-to-start (activates pump if nozzle is lifted)
Cash/credit
InfoScreen
Key control
Vapor recovery ready
Intercom
Overhead speaker
Preset cash and/or credit
Programmable pump preset
Lever-activated nozzle
"VaporVac" key control
Brand lighting
10.4 inch liquid crystal display

The mechanical totalizer (up to 999 999.9 gallons, metric, or imperial gallons) may not be present on all standard units.

Optional Model: RBXX (re-manufactured device)

This device was evaluated under the National Type Evaluation Program (NTEP) and was found to comply with the applicable technical requirements of Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date: December 7, 1999

Gilbert M. Ugiansky, Ph.D.
Chief, Office of Weights and Measures
Issue Date: March 7, 2000

Marconi Commerce Systems Inc.
Retail Motor Fuel Dispenser
Model: BXX Series

Application: For use in dispensing gasoline and diesel motor fuel at retail service stations, attended or unattended, with approved and compatible equipment. These dispensers are approved for use with Phase II vapor recovery equipment and approved bootless nozzles when the system and components are certified and comply with the zero-set-back interlock requirements.

Identification: The identification badge, metal or a self-destructive badge, is on the lower base plate below the access panel covering the hydraulics cabinet. The TRIND (transmitter/receiver in the dispenser) optional feature is indicated on the supplemental identification plate on the bottom of the dispenser cabinet.

Model Designation: The specific characters in the model designation are represented below.

Character Position 1:	Character Position 2:	Character Position 3:
B: The Advantage® Series	0: MPD Dispenser 1: MPD Pump 2: Dual Dispenser 3: Dual Pump 4: Quad Dispenser 5: Quad Pump 6: Fixed Blender Dispenser 7: Customer-Selectable Blender Dispenser 8: Single-Hose MPD Dispenser 9: Single-Hose MPD Pump A: Customer-Selectable Blend Pump B: 4 x 4 Dispenser C: 4 x 4 Pump D: Super Hi Dispenser E: Super Hi Pump F: Optimum Dispenser G: Optimum Pump H: Optimum Dual Dispenser I: Optimum Dual Pump J: Optimum Quad Dispenser K: Optimum Quad Pump L: Optimum Single-Hose Quad Dispenser M: Optimum Single-Hose Quad Pump N: Optimum Single-Hose MPD Dispenser P: Optimum Single-Hose MPD Pump	0: 1 grade, 1 side 1: 1 grade, 2 sides 2: 2 grades, 1 side 3: 2 grades, 2 sides 4: 3 grades, 1 side 5: 3 grades, 2 sides 6: 4 grades, 1 side 7: 4 grades, 2 sides 8: 3+0, Narrow, 2 sides 9: 3+0, Wide, 2 sides A: 5+0, Narrow, 2 sides B: 5+0, Wide, 2 sides C: 3+1, Wide, 2 sides D: 5+1, Wide, 2 sides E: 3+0, Narrow, 1 side F: 3+0, Wide, 1 side G: 5+0, Narrow, 1 side H: 5+0, Wide, 1 side I: 3+1, Wide, 1 side J: 5+1, Wide, 1 side K: 4+0, Narrow, 2 sides L: 4+0, Wide, 2 sides M: 4+1, Wide, 2 sides N: 4+0, Narrow, 1 side O: 4+0, Wide, 1 side P: 4+1, Wide, 1 side W: 2+1, Wide, 2 sides X: 2+1, Wide 1 side
NOTE: "Narrow" and "Wide" refer to dispenser frame width.		

Sealing: The meter calibration wheel is accessed by removing a metal pin from the meter calibration wheel and turning the calibration wheel to increase or decrease the delivery amount. Access to the meter calibration is prevented by threading a wire security seal through a hole in the metal pin and holes in the center and sides of the calibration wheel.

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Sealing (Continued):

Access to the electronic calibration, E-cal, switch on models which can be electronically calibrated is located behind the locked panel on the front of the dispenser cabinet. To access the adjustment mechanism models equipped with E-cal, remove the wire security seal that secures the hinged cover that fits over the switch. The switch is moved to the calibration position. A calibration code and the volume of the volumetric standard are entered into the keypad, next to the calibration switch. Product is then dispensed into the standard, a delivery error is determined in cubic inches, and the error value is entered into the keypad. The calibration switch is then returned to the normal operating position and the switch cover is sealed with a wire security seal.

A conversion factor is used to program all Advantage® Series dispensers to indicate in gallons or liters. An event counter is the only means of security for changes made to the conversion factor. Press “ENTER” on the manager’s keypad to view the main "Price Per Unit", that will display the number of times the conversion factor has been changed since the initial installation. Press any other key to revert to the normal display.

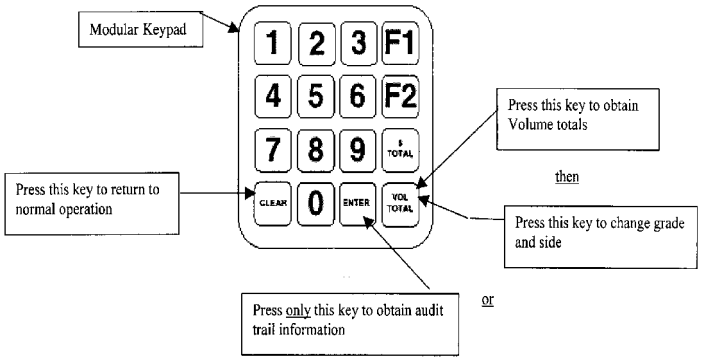
On customer-selectable and fixed-blenders, the individual blend ratios for each grade may be programmed at the dispenser or at the console. The method of security for this feature, when programmed at the dispenser, is an event counter form of an audit trail. Pressing "ENTER" on the manager’s keypad causes the display at the dispenser to indicate the number of times the blend ratio has been changed at the dispenser and at the console.

The "Sale Amount" display shows the number of times the ratios were changed via the dispenser keyboard. The "Volume" display shows the number of times the ratios were changed from the console. Pressing any other key will cause the display to revert to the normal display.

Operation: The vacuum-assist vapor recovery option for the Advantage® Series consists of an explosion-proof motor driving a vacuum pump. The motor(s)/pump(s) are in the hydraulics section of the dispenser. The PC board for the electronic vacuum pump-controller is in the electronics section of the dispenser. The PC board monitors the rate at which gasoline is dispensed and then proportionally controls the motor(s)/pump(s) speeds. The rate of vapor recovery is proportional to the product flow rate. Each hose is equipped with an electronically-operated vapor valve, which operates without isolating hoses.

Dispensers equipped with the “TRIND” (transmitter/receiver in the dispenser) are authorized by radio frequency communication. The transponder tag, mounted in the vehicle or hand-held unit, communicates to the receiver in the dispenser the customer’s predetermined preferences. The transponder may be overridden by using a credit card or the transaction canceled by pressing the “CANCEL” button. Transponders are not capable of concurrent use at multiple fueling positions or consecutive use at the same dispenser.

For E-Cal units with electronic totalizers (effective April 1, 1998), you can retrieve totals electronically at the pump or dispenser by using the modular keypad. This keypad sits behind the locked access door on the "A" side of the electronics module. For the Advantage® Series, it mounts on a removable magnetic pad that attaches to the inside cabinet behind the left or right option door.



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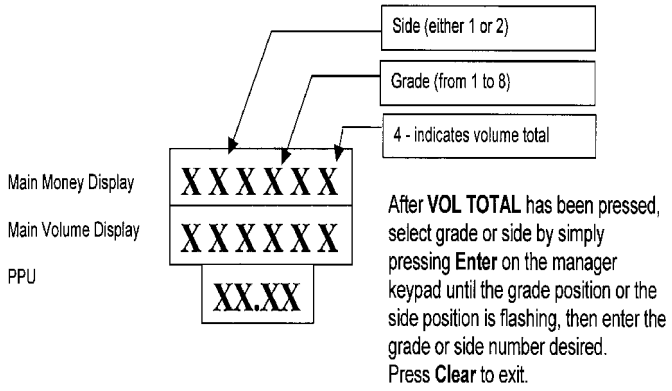
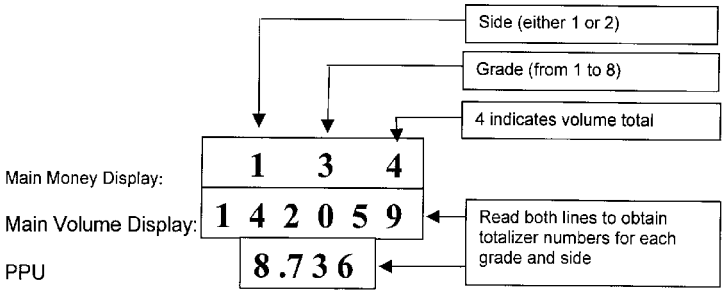
Operation (Continued):

The **VOL TOTAL** key is used to retrieve volume totals for each fuel grade. These key functions do not require a security code to access. Just press the **VOL TOTAL** button. The **CLEAR** key is used to exit volume total or audit trail modes.



Retrieving VOL TOTAL Examples:

Press **VOL TOTAL** - display changes from normal to volume totals
Press **Enter** to change the flashing display location to the first digit
Press **1** for side one or **2** for side two
Press **Enter** - flashing display moves to the second digit
Press 1 or 2 or 3 or 4 or 5 or 6, etc., for grades
Read electronic totalizer for each side and grade
Press **Clear** to return to normal mode



The above sample shows a volume total of **1 420 598.736** gallons on side 1, product 3.

Electronic totalizer can display up to 9 999 999.999 units (gallons or liters)

Test Conditions: This Certificate is issued based upon information provided by the manufacturer to change the name of the company from the previous name, Gilbarco Inc., and to transfer ownership of the device covered under Certificate of Conformance Number 90-115A9 to Marconi Commerce Systems Inc. This Certificate is also issued to include the optional Model RBXX (a re-manufactured device) that was originally covered under the Multi-Certificate of Conformance Number 92-197A1. All institutional knowledge of the previous owner has been transferred to the new company. Test conditions for Certificate of Conformance Numbers 90-115A9 and 92-197A1 and the preceding Certificates are as follows:

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Test Conditions (Continued):

Certificate of Conformance 90-115A9: This Certificate superseded Certificate of Conformance Number 90-115A8 and was issued to include a 10.4 inch display. The 10.4 inch display provides consumers with operational prompts/instructions for credit/debit/cash and all other forms of fueling transactions. The display may also provide customers with information not related to the transaction. The dispenser is still provided with separate money, volume, and price per unit displays. Two Advantage Series dispensers with the 10.4 inch display were installed at a field site and tested. All initial settings and test results showed that the units were in compliance with applicable requirements. The manufacturer also submitted an alternate version of its TRIND (Transmitter Receiver in Dispenser) unit. The alternate TRIND system operates on a frequency of 13.6 MHZ. The original TRIND operates on a frequency of 134 kHz and 900 MHZ. The frequency is noted for reference only and may change as needed to comply with FCC regulations and customer needs. The frequency does not change the basic function of the unit as evaluated. Two units were installed at a field site and were tested. All initial settings and test results showed that the units were in compliance with applicable requirements.

Certificate of Conformance Number 90-115A8: This Certificate superseded Certificate of Conformance Number 90-115A7 and was issued without additional testing to add a statement on the Certificate for use in unattended operations, to change the metal ID plate to a self-destructive Mylar ID plate, and to add a new bar code scanner option to the Advantage Series. The scanner was evaluated for all functions, readability, printing, and correct dispenser operations. The scanner option may be used in discount pricing by either scanning a bar code or using a card which has the information for the discount pricing on a magnetic strip which is to be inserted into the CRIND. If the bar code reader or the discount card is used, the PPU changes to the appropriate discounted price. Once the sale has been completed and the handle has been returned to the "OFF" position, the PPU will return to the original price per gallon after approximately a 10-second delay. The main display will retain the indicated total dollar sale and gallons dispensed. Certificate of Conformance Number 90-115A8 also adds the Ecometer that was tested under Certificate of Conformance Number 99-055. These meters were first tested in laboratory conditions with over a million-gallon throughput. All initial calibration settings and subsequent test results showed that the meters were in compliance with applicable requirements. Additionally, two models, the BxW and the BxX (2+1), were added to the Certificate without additional testing. These two models are the same in all aspects as the 3+1 blender except that one grade select button is removed. This change also notes an alternate display configuration removing the main PPU from all models.

Certificate of Conformance Number 90-115A7: This Certificate superseded Certificate of Conformance Number 90-115A6 and was issued without additional testing to include instructions on how to access the standard feature of the electronic totalizer on the E-Cal unit which was evaluated during the E-Cal evaluation (Certificate of Conformance Number 90-115A6) and to clarify the presence of the mechanical totalizer as an optional feature on standard units.

Certificate of Conformance Number 90-115A6: This Certificate superseded Certificate of Conformance Number 90-115A5 and was issued to include the diesel motor-fuel application (Certificate of Conformance Numbers 88-226A4 and 92-056A2) which was omitted, optional features of electronic calibration "E-Cal", the "Optimum" model version, and the TRIND (transmitter/receiver in dispenser) payment system to the BXX (Advantage®) Series dispensers. The Advantage Optimum model is identical to the BXX model except that the price per unit indications for each product grade share a single display, and the bezel is constructed of metal. This Certificate is based on information provided by the manufacturer, NTEP Participating Laboratory evaluation of the electronic calibration feature and TRIND payment system, and a previous evaluation of the electronic calibration feature (Certificate of Conformance Number 88-226A4).

Certificate of Conformance Number 90-115A5: This Certificate superseded Certificate of Conformance Number 90-115A4 and was issued to add the "4 x 4" and Super Hi pumps and dispensers to the model series. The "4 x 4" and Super Hi electronics and hydraulics are identical to the Legacy Series dispenser (Certificate of Conformance Number 94-027A2). This Certificate was issued without additional testing based on previous evaluations and information provided by the manufacturer.

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Test Conditions (Continued):

Certificate of Conformance Number 90-115A4: This Certificate superseded Certificate of Conformance Number 90-115A3 and was issued to add an optional screen display called "InfoScreen." The "InfoScreen" display is a flat panel LCD, offered in color or monochrome versions, which is installed on the upper housing of the dispenser. This "InfoScreen" may be used to replace the currently used single line display. All customer-required prompts and information will still be shown on the "InfoScreen" display. The "InfoScreen" display may also be used to display other information (for example: commercials, videos, and other forms of advertising). This certificate was issued without additional testing based on information provided by the manufacturer and an NTEP participating laboratory.

Certificate of Conformance Number 90-115A3: This Certificate superseded Certificate of Conformance Number 90-115A2 and was issued to recognize the "VaporVac" assist vapor recovery system and to recognize the "cash acceptor" option.

The "10 click" override test and the "VaporVac" system (see California Air Resources Board Certificate Number G-70-52) and OPW 11-VA1 bootless nozzles were installed on each of six Advantage Series dispensers. 150-car refueling tests were conducted at the field site. The emphasis of this evaluation was on the operation and compliance of the nozzle liquid primary shut-off and anti-drain valve.

A unit containing the cash acceptor option was evaluated initially at the manufacturer's facility in a test stand. The emphasis of the initial evaluation was on the design and operation of the device with this option. A unit with the cash acceptor option was installed in a field installation where it was tested for accuracy initially and again after a period of 30 days.

Certificate of Conformance Number 90-115A2: This Certificate was issued to make editorial changes, include the selectable blender dispenser, and add more options. The software, modular electronics, and all other standard components used in the selectable blender dispenser have previously been evaluated in other devices for which Certificates of Conformance have been issued. The Advantage selectable blender dispenser was installed at a field site and evaluated initially 40 days later.

Certificate of Conformance Number 90-115A1: This Certificate was issued to include an option for vapor recovery and to include an option for the Gilbarco Inc. customer preset (see NTEP addendum sheet issued June 21, 1990). The design and operation of the Gilbarco Inc. customer preset option were evaluated at the manufacturer's facility in a Gilbarco Inc. MPD dispenser using a product flow simulator. The preset option was then installed at a field site in a Gilbarco Inc. MPD-2 dispenser and evaluated initially 20 days later. No NTEP testing has been performed on the device equipped with vapor recovery option or equipment to determine compliance with air resources board requirements.

Certificate of Conformance Number 90-115: The Advantage Series dispenser uses components that have been previously evaluated under the National Type Evaluation Program including modular electronics (Certificate of Conformance Number 86-024) and the Gilbarco Inc. "C" Meter (Certificate of Conformance Number 88-003A3).

Certificate of Conformance Number 92-197A1: This Certificate superseded Certificate of Conformance Number 92-197 and was issued to change capacities to cover either 5 or 6 digits for price and volume.

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Test Conditions (Continued):

Certificate of Conformance Number 92-197: This Certificate was issued to list Gilbarco retail motor fuel dispensers which are re-manufactured within company-owned facilities. This Certificate was in addition to the original Certificates of Conformance. The manufacturer certifies that rebuilt equipment is cleaned, inspected, refurbished and tested, and any component or part such as meters (replacement meters are new), pulsers, displays, etc., not meeting specifications is rejected and replaced. Operation and performance are not altered.

The results of the evaluations and information provided by the manufacturer indicate the devices comply with applicable requirements of NIST Handbook 44.

Type Evaluation Criteria Used: NIST Handbook 44, 1999 Edition

Tested By: R. Murdock (NC) and T. Butcher (NIST) 90-115; R. Murdock (NC) and T. Butcher (NIST) 90-115A1; B. DeSalvo (OH) 90-115A2; S. Barron (CA) and R. Murdock (NC) 90-115A3 & 90-115A8.

Information Reviewed By: C. V. Cotsoradis (MD) 90-115A2; T. Grimes (NIST) 90-115A4; J. Williams (NIST) 90-115A5 & 90-115A6; L. T. Sebring (NIST) 90-115A7 & 90-115A8; R. Whipple (NIST) 92-197; R. Suiter (NIST) and G. Newrock (NIST) 92-197A1; L. Sebring (NIST) and G. Newrock (NIST) 99-173